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# China Report

SCIENCE AND TECHNOLOGY

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12 June 1981

# CHINA REPORT

## SCIENCE AND TECHNOLOGY

No. 104

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## NATIONAL DEVELOPMENTS

### EAST CHINA ENVIRONMENTAL PROTECTION CONFERENCE HELD

Beijing GUANGMING RIBAO in Chinese 3 May 81 p 2

[Article by Yang Kaimin [2799 7030 3046]]

[Text] A conference on environmental protection for six provinces and one city of East China took place 7-9 April under the auspices of the Environmental Protection Office of the State Council. The participants exchanged their experience and studied ways to activate in-depth propaganda activities for environmental protection.

The propaganda activities for environmental protection envisaged by the conference are as follows: The various provincial and municipal people's governments must play a more active role; sum up the environmental protection work and commend those units and individuals for their satisfactory work; join together the "five emphases," "four beautifications," and the patriotic health drive in order to make the environmental protection propaganda more extensive and penetrating. The conference decided that the next round of propaganda activities should focus on "The State Council Decision on Strengthening Environmental Protection During the Readjustment of the National Economy" so as to make the propaganda cover both the State Council decision and the environmental protection law. Special emphasis should be placed on the environmental protection policy during the readjustment of the national economy. The essentials are as follows: Prevent the spread of new sources of pollution and stop the construction of all improperly planned industrial projects which waste natural resources and energy and cause uncontrollable environmental pollution; all capital constructions must meet the "three concurrent requirements" just as pollution control must be included in efforts to explore production potentials or the innovation and transformation of an enterprise; all the cities and industrial centers concerned should investigate and analyze the sources of environmental pollution and work out plans to control them according to the degree of urgency. The immediate targets are to control pollution by industries and enterprises located in residential areas, protected areas of water supply and areas of scenic and tourist interest; and publicize effectively the state environmental protection programs and guidelines to get the people's governments at all levels to work for effective pollution control by including the targets, requirements and implementation measures of environmental protection in the plans and programs they formulate for the national economy and social development.

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CSO: 5000/4065

## NATIONAL DEVELOPMENTS

### HEAT RECYCLING PROJECT USES ELECTRIC POWER PLANT'S WATER

Beijing GUANGMING RIBAO in Chinese 3 May 81 p 2

[Article by Lu Xiaochen [7627 2556 2525]]

[Text] By circulating water from the electric power plant for heating, the city of Shenyang conserves energy, brings comfort to its residents and reduces urban environmental pollution.

The electric power plant in the Tiexi District of Shenyang used to cool its circulating water by forcing it through a water cooling tower where the heat escaped into the atmosphere. The nearby business units and residents, however, had to install large numbers of furnaces for heating in winter. These scattered furnaces were inefficient thereby wasting fuel and polluting the environment. To improve environmental quality, conserve fuel and do away with what is harmful, the state approved last year the construction of a heat recycling project in the Shenyang electric power plant to transmit heat through vacuum circulation to the community. When the first stage construction was completed last year, the power plant was able to send its circulating hot water at 75°C to an area of 1 million square meters with more than 20,000 households in the Workers Villa of the Tiexi District. The heat was good enough to replace over 100 furnaces.

During the peak heating season between winter and spring, the circulating hot water provided by the power plant saved the state about 50,000 tons of raw coal, equivalent to 20 percent of the coal saved last year by the city of Shenyang. It also saved 2 million kilowatts of electricity, 310,000 ton/km of transportation power and over 3,000 tons of oil. The shipment of a no longer needed consignment of furnaces was called off, thus the provincial government saved a tremendous amount in the labor force. The coal consumption per kilowatt at the Shenyang Power Plant is also down from 450 kg to 380 kg. When the entire project is completed, it would heat an area of 2 million square meters. The heat utilization rate will go up from 38 percent to 87 percent. The investment in the project will be paid back in 2 years.

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## NATIONAL DEVELOPMENTS

### BRIEFS

**ENVIRONMENTAL ENGINEERING SOCIETY**--The Environmental Engineering Society of the Chinese Environmental Science Association held its inaugural ceremony 18-24 March 1981 in Jinan where it elected the members of its leadership organ, passed its constitution and drew up a plan of activities for the coming 2 years. Environmental engineering, a new comprehensive science, is a vital part of environmental science. It studies the technological principles and methods of applying engineering measures to improve environmental quality, to control pollution and to protect the environment. More than 170 specialists who attended the meeting agree that during the readjustment of the national economy the research objectives of environmental engineering must be in keeping with the environmental protection work of our country. Major emphasis should be placed on massive, extensive, inexpensive and effective engineering measures which do well in pollution control and environmental protection. [Text] [Beijing GUANGMING RIBAO in Chinese 3 May 81 p 2] 5360

**ELIMINATION OF SMOKE AND DUST**--The Tianjin Chemical Factory which had improved its furnace and strengthened its operations and management scientifically is now able to eliminate smoke and dust and run its production with less coal. Previously its furnace room used to be a hot, smoke-filled and unhealthy place to work. Outside the furnace room one saw nothing but black smoke and falling coal dust. It wasted fuel and polluted the environment. The workers and the masses in the vicinity were so fed up with the situation that they called it a place full of "false cloudy days" and a "downpour of dark snow." Using what it had on hand, the factory improved the structure of its furnace to eliminate dust by means of a tight seal to keep out dust and water to rinse away dirt. As it reinforced its operations and management scientifically, it has come up with a "thinner, faster, milder" readjustment procedure (a thinner layer of coal, greater speed and a milder air blast). This helps the furnace generate a stronger force, faster and at a lower cost, eliminate smoke and dust and improve environmental quality. Now, the furnace room is so bright and clean that the production conditions have become much more civil. The chimneys both inside and outside the factory have stopped emitting black smoke. It is now able to eliminate as much dust as required by the state and reach for more advanced levels in other economic areas as compared with similar factories in the country. [Text] [Beijing GUANGMING RIBAO in Chinese 3 May 81 p 2] 5360

**SCIENTIFIC ACHIEVEMENTS AWARDS**--Beijing, 14 May (XINHUA)--The Invention Assessment and Selection Committee of the State Scientific and Technological Commission recently awarded prizes to scientists, engineers and technicians of 26 inventions including new fine strain cotton seeds "Lu Mian No 1"; a method of coal mining with flexible pseudo-slope shield props; a method for manufacturing curvilinear parts; a method of copper-smelting from silver; an effective pesticide for the elimination of crosscosmia in tussah [silk worms]; a diaphragm-type food extractor; Dongfeng 2-S mobile rice seedling transplanter; a method for the prevention and treatment of a tussah disease and so on. [OW160327 Beijing XINHUA Domestic Service in Chinese 0158 GMT 14 May 81]

## PHYSICAL SCIENCES

### PRC PROFESSOR DISCUSSES BIOLOGICAL RESEARCH

OW181231 Beijing XINHUA in English 1220 GMT 18 May 81

[Text] Beijing, May 18 (XINHUA)--Scientists in China have successfully separated and purified the active center of nitrogenase, the nitrogen fixation enzyme. This is a big step forward in biological research, according to Professor Bei Shizhang, acting director of the department of biology of the Scientific Council of the Chinese Academy of Sciences.

Interviewed at the fourth session of the council, now in session, 78-year-old Professor Bei said China has made achievements of international importance in molecular genetics and genetic engineering, though work in these fields began quite late here.

Scientists of the People's Republic have done much in the study of the structure, functions and synthesis of biological macro molecules, Professor Bei said. For instance, the crystalline structure of porcine insulin was determined here between 1971 and 1973.

Professor Bei also mentioned that biologists have developed 20 varieties of haploid plants from pollen grain cultures, and a male anti-fertility drug from cotton-seed oil.

China has made many practical applications in biological science as well, Professor Bei said. Forty varieties of important economic plants have been introduced in the last decade, and a number of wild plants which are of great economic value have been identified. Botanists have successfully imitated multi-layer tropical plant communities in Guangdong, Guangxi and Yunnan. Now this work is on a large scale basis, which will contribute to the development of the study of ecology.

Another achievement of scientists in China is synthesis of a hormone to facilitate breeding of fish and domestic animals, Professor Bei Shizhang said.

CSO: 4020/200

## PHYSICAL SCIENCES

### LI XUN ON CHINA'S ACHIEVEMENTS IN TECHNOLOGY

OW181320 Beijing XINHUA in English 1251 GMT 18 May 81

[Text] Beijing, May 18 (XINHUA)--Scientists have done basic research on the fluorite-iron ore found in Baotou, Inner Mongolia and on vanadium-titaniferous magnetite. China abounds in these two minerals, according to Li Xun, Standing Committee member of the department of technical sciences of the Scientific Council of the Chinese Academy of Sciences in an interview here today.

Other technological developments are the production in China of special steels, including boron steel and manganese-molybdenum low alloy steel, he said.

China has manufactured first, second and third generation large universal computers. In the 25 years that computer science has been studied here, 29 types of computers have been made. At least 1,500 projects have made use of computers including the structure of synthetic insulin, stress in construction of large dams and weather forecasting, Professor Li said.

In applied optics, China manufactures electric microscopes, scanning electron microscope, multi-spectra cameras, scanning cameras and other large optical equipment. Scientists in China have pioneered in laser research and infra-red techniques.

In semiconductors, some large-size integrated circuits have been produced and purification of the epitaxy growth of gallium arsenide has reached advanced levels, he said.

Professor Li Xun said, scientists have used an electrical spark shock source to conduct seismological prospecting of deep oil deposits under sea beds. They are conducting experiments on power generation through magnetic fluid.

In automation, he said, scientists have developed a high precision T.V. tracking system and automatic monitoring meters for Chinese satellites.

In thermophysics, scientists have evolved the three-dimensional fluidic theory, first put forward in the early 1950's. A new engineering model and equation have been proposed, which have led to some new laws of motion which have been validated by experiments.

CSO: 4020/200

## PHYSICAL SCIENCES

### BRIEFS

**MAJOR SOLAR FLARE SIGHTED**--Beijing, May 15 (XINHUA)--The Beijing and Yunnan observatories and the Zijinshan (Purple Mountain) observatory in Nanjing have reported sighting another major solar flare on May 13, following two other major solar explosions viewed on April 1 and April 27. Chinese astronomers had predicted the newest flare in late April. It lasted two hours, commencing at 11:32 a.m. and reaching its maximum brightness at 12:19. It occurred on the north-eastern quadrant of the solar surface (53 degrees longitude and 12 degrees north latitude), the same solar activity area as the April 27 flare. The latest flare gave off x-rays which caused serious confusion in the ionosphere and interrupted short-wave communications, astronomers said. [Text] [OW150806 Beijing XINHUA in English 0758 GMT 15 May 81]

**ASTRONOMER'S REPORT TO COUNCIL**--Beijing, May 18 (XINHUA)--The accurate determination of universal time by Chinese astronomers is up to advanced world level, it was stated at the current session of the Scientific Council, the highest policy-making body of the Chinese Academy of Sciences. Hua Luogeng, noted Chinese mathematician and vice-president of the Chinese Academy of Sciences, reported to the department of physics and mathematics under the Scientific Council last week that astronomers in the Shanghai Astronomical Observatory and five other observatories have determined universal time in coordination. He said this work is of great significance in astronomical navigation and geodesy. Hua Luogeng said that a total of 150 major scientific achievements were made by scientists in the department of physics and mathematics from 1977 to 1980--including 24 in mathematics, 19 in dynamics, 62 in physics and 45 in astronomy. The department of physics and mathematics has 29 research institutes with a total of 3,700 research workers and 4,700 engineers and technicians. Professor Hua said that some major areas of research should continue to be given support in the current economic readjustment program. He pinpointed such areas as the condensed state physics and nuclear physics, practical surveys in astronomy, aerodynamics, and the property researches in material dynamics. [Text] [OW181258 Beijing XINHUA in English 1246 GMT 18 May 81]

CSO: 4020/200

## APPLIED SCIENCES

### PRC SCIENTIST STRESSES CHEMISTRY'S ROLE IN ECONOMIC CONSTRUCTION

OW171101 Beijing XINHUA Domestic Service in Chinese 0811 GMT 16 May 81

[Excerpts] Beijing, 16 May (XINHUA)--Chemistry and chemical engineering should proceed from the characteristics of China's natural resources and make greater contributions to the solution of major comprehensive problems concerning energy and materials in building the national economy and national defense as well as to the improvement of the people's livelihood. This was pointed out by Lu Jiaxi, acting director of the chemistry department of the Chinese Academy of Sciences, in his report on the work of the chemistry department to the fourth Scientific Council under the Chinese Academy of Sciences.

In his report, Lu Jiaxi summarized the achievements made by various scientific research units under the chemistry department. He said that various departments throughout the country had achieved great development and registered some major results in the scientific research on chemistry and chemical engineering in the past few years.

Lu Jiaxi held that it is necessary to vigorously strengthen the study of synthetic chemistry and structural chemistry, the study of elements that China has a high yield of and the study of rare-earth chemistry.

In solving some major problems concerning the development of the national economy and national defense, it is necessary to vigorously promote various basic studies on energy conservation as well as the application of the results of basic studies. It is necessary to promote the study of new methods and techniques of separation in view of the existence of such important natural resources as the salt lake in Qinghai, the rare-earth mine in Baotou, the vanadium, titanium and iron mines in Lizhihua [2746 2655 5363] and the nickel mine in Jinchuan and also to promote a thorough study of basic chemical problems concerning the process of separation. On the basis of these studies, an economical and advanced technical orientation marked by low energy consumption but high efficiency should be worked out for comprehensive utilization.

In conclusion, he expressed his wish that all council members would work in full cooperation and with unity of purpose to make new contributions to the vigorous development of chemistry and the achievement of modernization.

CSO: 4008/360

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Strength Laboratory, Nanjing Aeronautical College (2)

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Pang Dingqian [1690 3521 0051], First Hydrogeological Team,  
Jiangsu Province

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2837], both of the Northeastern Electric Power Design  
Institute, Ministry of Electric Power Industry

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Beijing SHUXUE XUEBAO [ACTA MATHEMATICA SINICA] in Chinese Vol 24 No 2, 1981  
inside back cover

[Text] CHEN Hanlin [7115 3060 7792]

Institute of Mathematics, Chinese Academy of Sciences; article: "On Fitting Surface and Preserving Shaped Approximation with Discrete Data." (Beijing SHUXUE XUEBAO [ACTA MATHEMATICA SINICA] Vol 24 No 2, 1981, pp 161-176)

LI Bingren [2621 3521 0088]

Institute of Mathematics, Chinese Academy of Sciences; article: "A Reduction Theory on the Localizable Measure Space." (Ibid., pp 177-184)

WU Zhende [0702 2182 1795]

Hebei Teachers' University; article: "The  $KO$ -Groups and  $J$ -Groups of Complex Manifolds  $W_{n,2}$ ." (Ibid., pp 185-189)

TU Guizhang [1458 6016 1757] and QIN Mengzhao [4440 1322 0340]

Both of the Computation Center, Chinese Academy of Sciences; article: "On the Criteria of Euler-Lagrange Equation." (Ibid., pp 190-206)

YU Shuxiang [0151 3412 4382]

Institute of Mathematics, Chinese Academy of Sciences; article: "A Global Behavior of Continuous Flows on 2-Manifolds." (Ibid., pp 207-210)

SHI Yingguang [0670 2019 0342]

Computation Center, Chinese Academy of Sciences; article: "The Uniqueness of Simultaneous Best  $L_p$  Approximation." (Ibid., pp 211-216)

SHEN Yibing [3088 0001 0365]

Hangzhou University; article: "Einsteinian Spaces with Corresponding Geodesics and the Riemannian Space  $V(K)$ ." (Ibid., pp 217-228)

GONG Guanglu [7895 0342 7627] and QIAN Minping [6929 2404 1627]

Both of the Department of Mathematics, Beijing University; article: "The Reversibility of the Markov Processes Induced by a Second Order Differential Operator." (Ibid., pp 229-246)

ZHU Yaochen [2612 1031 6591]

Institute of Applied Mathematics, Chinese Academy of Sciences; article: "A Note on the Transcendence of Mahler's Decimal Fraction." (Ibid., pp 247-253)

CHEN Hanfu [7115 5060 7450]

System Science Institute, Chinese Academy of Sciences; article: "The Equivalent Conditions for the Stochastic Observability." (Ibid., pp 254-259)

LIU Yingming [0491 2019 2429]

Sichuan University; article: "Compactness and Tychonoff Theorem in Fuzzy Topological Spaces." (Ibid., pp 260-268)

LOU Shituo [2869 0013 2148] and YAO Qi [1202 3823]

Both of Shandong University; article: "The Exceptional Set of Goldbach-numbers in a Short Interval." (Ibid., pp 269-282)

WU Zhuoren [0702 0587 0086]

Department of Mathematics, Fudan University; article: "On a Class of Functions Related to Starlike Functions." (Ibid., pp 283-290)

WANG Yangxian [3769 0111 6343]

Hebei Teachers' College; article: "On the Length Problem in Orthogonal Groups." (Ibid., pp 291-302)

WANG Yuan, WANG Lianxiang and REN Jianhua [no characters provided]

WANG Yuan and WANG Lianxiang both of the Institute of Mathematics, Chinese Academy of Sciences; REN of the Department of Mathematics, Northwest University; article: "A Note on a Transference Theorem of the Systems of Linear Congruences." (Ibid., pp 303-307)

CHEN Zhongmu [7115 6850 4476]

Southwest Teachers' College; article: "Groups of Full Power-- $Z_m$  Factorizable Groups." (Ibid., pp 308-320)

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CSO: 4008/303

AUTHOR: CHEN Yubao [7115 3768 1405]

ORG: Overseas Chinese University

TITLE: "Structure and Development of Computer Systems"

SOURCE: Beijing DIANZI KEXUE JISHU [SCIENCE AND TECHNOLOGY OF ELECTRONICS] in Chinese No 5, 81 pp 2-4

ABSTRACT: The advancement of semi-conductors has caused many changes in computers. The concept of a computer has changed from individual machines to a system. The overall development is in the 2 directions of high function large machines and inexpensive microcomputers. Instead of the storage unit[or the memory] being the center, the CPU [central processing unit] is now the center of a computer system. This paper explains the structure of the improved single main line system, the multiple main line system, the single instruction multiple data flow system, and the multiple instruction multiple data flow system. Block diagrams are given to explain these structures. New and rapid changes in computer systems are expected everyday.

AUTHOR: ZHANG Ying [1728 4134]

ORG: None

TITLE: "Infrared Television Microscope"

SOURCE: Beijing DIANZI KEXUE JISHU [SCIENCE AND TECHNOLOGY OF ELECTRONICS] in Chinese No 5, 81 p 38

ABSTRACT: Under the joint research efforts of the Central China College of Engineering, the 1445 Research Institute of the Fourth Ministry of Machines, and the Beijing Municipal Research Institute of Semiconductor Devices, the infrared television microscope has been successfully made. The theory is based upon the optical property of the near infrared light of being able to penetrate semiconductor materials. The infrared rays carrying various data that are capable of penetrating semiconductor materials are, through a pick-up camera, converted into corresponding visual frequency signals, which are amplified before displayed onto a television screen as images. With this machine, the internal condition of the semiconductor material may be directly monitored on the television screen. When it is used to monitor semiconductor materials, this infrared television microscope may be used for reflex observation or transmission observation, in a maximum multiplication of 1500 and a maximum resolution of 14μ. This microscope is being produced in batches by the 1445 Research Institute.

AUTHOR: None

ORG: Hangzhou College of Electronic Engineering

TITLE: "A Brief Introduction of the Hangzhou College of Electronic Engineering"

SOURCE: Beijing DIANZI KEXUE JISHU [SCIENCE AND TECHNOLOGY OF ELECTRONICS] in Chinese No 5, 81 p 47

ABSTRACT: The Hangzhou College of Electronic Engineering is located on the banks of the beautiful West Lake, surrounded by several other schools of high education. A garden as large as 140,000 m<sup>2</sup> is included in its campus. It is jointly supervised by the Department of Industries of the Fourth Ministry of Machines and Zhejiang Province, with the former being the major supervisor. It is a 4-year college and has 4 departments of mechanical engineering, industrial economics, management engineering and electronic engineering, and computer science. Continuous expansion is being planned in the next few years. New classroom, laboratory, and library buildings will be constructed. A brief description of each of the departments of the college is included.

AUTHOR: None

ORG: Guilin College of Electronics Engineering

TITLE: "The Guilin College of Electronic Engineering Amidst Beautiful Mountains and Streams"

SOURCE: Beijing DIANZI KEXUE JISHU [SCIENCE AND TECHNOLOGY OF ELECTRONICS] in Chinese No 5, 81 p 47

ABSTRACT: The Guilin College of Electronic Engineering has been approved May 80 by the State Council and plans are being made to admit 300 students during the 1981 academic year. There will be 160 students in the Department of Electronic Mechanics, 100 in Radio Engineering, 40 in Electronic Computers, to be recruited from the 16 provinces (cities) of Sichuan, Guizhou, Shaanxi, Henan, Hubei, Hunan, Guangdong, Guangxi, Jiangsu, Zhejiang, Fujian, Jiangxi, Beijing, Hebei, Shanxi, and Tianjin. The requirement of the college is to teach the students to master the basic theory and techniques of information transfer and processing in the Radio Department, the basic theory and knowledge of designing, experimenting, and engineering drawing in mechanics and electronics in the Electronic Mechanics Department. The Electronic Computer Department is divided into the 2 divisions of computer applications and automatic control. All students are to master one foreign language to the extent of being able to read journals and books of the student's own field.

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CSO: 4009/289

AUTHOR: WANG Yang [3076 2254]

ORG: None

TITLE: "New Instrument for Inspecting Large Bamboo"

SOURCE: Beijing YIQI YU WEILAI [INSTRUMENTATION AND FUTURE] in Chinese No 4, Apr 81 pp 7-8

ABSTRACT: Bamboo is an important construction and industrial material. It is produced in all provinces of the Changjiang [Yangzi] and Zhujiang [Pearl] river valleys in China and large quantities of it and products made of it are exported every year to earn a great deal of foreign exchanges for the country. Bamboo comes in all circumferences. For State's purchase, it is divided into 7 grades and one extra grade. The inspector [purchaser of the state] has always had to get onto the ground to measure each one with a tape measure. Grading is not accurate in that manner. Last year, the Xiuning County Research Institute of Agricultural Machinery of Anhui Province succeeded in making a new instrument. When it is pushed onto a bamboo pole, the grade can be read out immediately, and a counter counts the number of bamboo poles in each grade. The instrument weighs only 2.85 kg. With it, one operator can inspect 16,000 poles per shift. The work efficiency is 6 times higher than manual inspection, and the grading accuracy is above 95 percent. The structure and work theory are introduced.

AUTHOR: XUE Qin [7185 3830]  
HU Guang [3337 0342]

ORG: None

TITLE: "Application of Thermograph in Industrial Temperature Measurement"

SOURCE: Beijing YIQI YU WEILAI [INSTRUMENTATION AND FUTURE] in Chinese No 4, Apr 81 pp 14-15

ABSTRACT: This paper explains the need for testing the temperature of many materials, machines, products, etc. such as the casing of a torpedo, for determining their quality and safety, and the difficulty of obtaining the temperature of an entire item without testing every point of that item. Thermograph is a far-infrared image-forming device which provides a thermal photograph by scanning an object or scene. The use of a thermograph by the steel rolling mill of an English steel company to test the temperature of electrical components, such as silicon controlled rectifier is the only example given to illustrate the industrial application of thermograph. There is no mention of Chinese made thermographs.

AUTHOR: MIAO Bao [5379 5383]

ORG: None

TITLE: "Total Visual Field Camera"

SOURCE: Beijing YIQI YU WEILAI [INSTRUMENTATION AND FUTURE] in Chinese No 4, Apr 81 p 32

ABSTRACT: Anyone who has some knowledge of photography would know that even when an extra-wide angle lens of a visual angle of 120-180° is used to take a picture of a large group of people, the images of those who are at the edges of the picture will not be very clear. Then, how do newspaper photographers take pictures of thousands of people in a group? They use a special camera, called total visual field camera. The Shanghai Camera Plant No 4 has succeeded in making such a camera. The theory of a total visual field camera is briefly explained.

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CSO: 4009

Machinery

AUTHOR: JIANG Zongdi [5592 1350 6611]

ORG: Shanghai Municipal First Bureau of Machinery and Electrical Industries

TITLE: "A Discussion Concerning Promoting Joint Enterprise of Machinery and Electrical Industries in Shanghai"

SOURCE: Shanghai JIXIE ZHIZAO [MACHINERY] in Chinese No 4, 81 pp 26-27

ABSTRACT: ZHANG Bingqian [1728 4426 6197] suggested, in the Oct 80 issue of SHANGHAI JIXIE, open discussion of the problem of readjustment of machine industries in Shanghai. This paper is in response to that suggestion. In the opinion of the author, it is commonly accepted [in China] that socialist mining and industrial enterprises are organized, on the basis of the principle of economic accounting, to become production and economic units, relatively independent of one another, under the 2 basic conditions of (1) a unification of productive technologies; (2) separate decision-making units in business management. These independent units may be encouraged to merge if there is an internal connection and if the merge is favorable for improving production efficiency, saving manpower, materials, and money, for adopting new materials, work processes, equipment, or for developing new products. Such conditions did not exist for some companies of which industries of machines and electricals in Shanghai are currently subordinate units. Whether these com-

[continuation of JIXIE ZHIZAO No 4, 1981 pp 26-27]

panies can be directly changed into joint enterprise companies to have independent accounting and to be responsible for the losses and gains of each individual company remains a debatable question. Moreover, some of these companies are better off than others. If they are merged to share the profits and losses, the merge will in fact have the function of protecting the backward at the expense of the advanced. This will be an unreasonable move and will discourage the positiveness of the advanced units. On the other hand, to use the rubber seal industry of the machine industries as an example, it is now managed by a chemical engineering and rubber company which cannot treat the product as an emphasized item. If it can be reorganized and included in an enterprise company of the machine industry, the quality of the product may be improved. These and other problems of industrial re-organization are discussed.

AUTHOR: XIA Lefa [1115 2867 4099]

ORG: Langzhong Silk Mill, Sichuan Province

TITLE: "Enlarging the Processing Range of C618 Lathes"

SOURCE: Shanghai JIXIE ZHIZAO [MACHINERY] in Chinese No 4, 81 p 37

ABSTRACT: With the original data plate and wheel attachments, there is no way to cut worm shafts and some screw threads on the C618 lathe. In order to enlarge the usefulness of these lathes, the author and colleagues added 4 wheel attachments with 40, 50, 65, and 87 cogs respectively. Of the four, the 40-cog wheel may be used to cut 1-2.5 pitch screw threads and when cutting is completed, there is no need to change the wheel before cutting the circumcircle. A great deal of the time for changing attachments may thus be saved. The way these wheel attachments is designed is explained.

AUTHOR: CHEN Rongru [7115 5816 1172]

ORG: Shanghai Municipal First Bureau of Machinery and Electrical Industries

TITLE: "Successful Research on Making Large Thickness Copy Type Precision Cutting Machine"

SOURCE: Shanghai JIXIE ZHIZAO [MACHINERY] in Chinese No 4, 81 p 38

ABSTRACT: With the support and cooperation of Harbin Research Institute of Welding and Joining and Shanghai Heavy Machinery Plant, the Shanghai Gas Welding Machinery Plant spent 6 months to study and make China's first CG<sub>2</sub>-W600-1500 large thickness copy type precision cutting machine. The pilot machine has been used in production by the Shanghai Heavy Machinery Plant for more than 3 months. For example, to process the 728 engineering hook requires a total cutting of 5m in length, 230mm in thickness, and 130mm in thickness in the hanging ring. If the Longmen milling machine is used to process it, 202 hours of labor are required and computing at 10 yuan/man-hour, the labor cost should be more than 2,000 yuan. With the precision cutting tool, 4 of these may be finished in one day, at a cost of 200 yuan each. The major technical parameters of this newly created cutting tool are given.

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CSO: 4009/276

AUTHOR: LI Lan [2621 5695]  
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TITLE: "Micro-fissures in High Carbon and High Carbon Alloy Steel and Their Effects on Mechanical Property"

SOURCE: Beijing JINSHU RECHULI [HEAT TREATMENT OF METALS] in Chinese No 4, 25 Apr 81 pp 26-33

ABSTRACT: Micro-fissures produced in high temperature quenching of steels of GCrl5, CrWMn, T12, etc. are observed and analyzed to determine their effects on mechanical property. Numerous micro-fissures are found to be produced in all 3 types of steel, and the length of the fissures is close to that of martensitic aciculae. If fissures are produced in prequenching, neither prolonged tempering nor re-quenching in low temperature will eliminate them, and they have an obvious effect on impact toughness ( $\alpha_k$ ). Scanning of the cracked edge reveals that fissure at the grain boundary is even more dangerous. The method of avoiding micro-fissures is to adopt sorbite treatment or other form of quenching. Satisfactory result may also be obtained by cooling beyond Ms and tempering immediately while warm.

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TITLE: "Brief Reports of Worksite Experiences"

SOURCE: Beijing JINSHU RECHULI [HEAT TREATMENT OF METALS] in Chinese No 4, 25 Apr 81 pp 33-42

ABSTRACT: Ten short papers are included: (1) Kerosene, methanol controlled atmosphere carburization; (2)  $Fe_3O_4$ -KBF<sub>4</sub> catalytic power boronization; (3) 3Cr2W8 steel die-casting mold oxygen added soft nitrogenation; (4) Heat treatment of Cr12MoV steel refractory brick mold; (5) Heat treatment of foam plastic casting mold; (6)

[continuation of JINSHU RECHULI No 4, 1981 pp 33-42]

Heat treatment of material input cylinder of plastics injecting machine; (7) Heat treatment of film-like spring; (8) Heat treatment of Mn13 steel material bowl; (9) Quick annealing of ferrite forged cast iron; (10) Taking sample gas from gaseous carburization furnace

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CSO: 4009/274

AUTHOR: YANG Wenqing [2799 2429 3237]

ORG: None

TITLE: "The Rapidly Developing Space Energy Source"

SOURCE: Beijing KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 5, 81 pp 3-5

ABSTRACT: Energy source is not only the life of modern industries but also the key to space travel and the development of space technology will start a revolution in the availability of energy. With the development of sciences and technologies of the 80's, new and important developments in energy source will soon follow. In separate section this paper discusses space energy source developments of the past 20 years, including solar cells, cadmium-nickel and silver-zinc batteries in space, hydrogen-oxygen fuel batteries, and space nuclear energy. Future trends of development in the direction of large volume, high power, long useful life, and multiple function energy sources in space are also very briefly discussed.

AUTHOR: YANG Shu [2799 2885]

ORG: None

TITLE: "New Trends in Chemical Warfare"

SOURCE: Beijing KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 5, 81 pp 24-25

ABSTRACT: Ever since the introduction of chlorine gas, phosgene, mustard gas, etc. during WWI, there have been vehement cries against the use of poisonous chemicals in combat but the development of chemical warfare continues and the new types of nerve gases are ever more powerful and low cost. Someone once estimated that the cost of mass killing per km<sup>2</sup> is 10-100 thousand dollars with airborne bombs, 2 thousand with conventional weapons, 8 million with nuclear weapons, and 6 hundred with nerve gas. New measures to protect combatants from chemical warfare are also being developed and all countries are emphasizing the NBC system which protects against future nuclear, chemical, and biological weapons all at once, being a unified pollutant protection method. It was revealed in Western newspapers that nerve gas, mustard gas, and hydrogen cyanide weapons are being readied at the Sino-Soviet border by the USSR, and chemical weapons are poised on the Vietnam side of the Sino-Vietnam border. The author warns the readers to be cautious.

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CSO: 4009/292

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